

WHAT IS CLAIMED IS:

1. A method of re-acquiring alignment of an optical wireless device, the optical wireless device transmitting information over a light beam and storing orientation information for a last known good alignment position for the light beam, the method comprising:

detecting a disruption of reception of an information transmitting light beam, when the light beam is at a first alignment position;

positioning the light beam to the last known good alignment position;

sweeping the light beam through a first pre-defined re-acquisition pattern; and

periodically transmitting position information over the light beam during the sweeping step.

2. The method of claim 1 further comprising:

waiting a pre-determined period of time after detecting the loss of alignment prior to positioning the light beam to the last known good alignment position; and

leaving the light beam at the first alignment position and resuming communication on the light beam if the disruption of reception of the information transmitting light beam ends during the pre-determined period of time.

3. The method of claim 1 further comprising:  
  
positioning the light beam to a default alignment position;  
  
sweeping the light beam through a second pre-defined re-acquisition pattern; and
- 5 periodically transmitting position information over the light beam during the sweeping of the second pre-defined re-acquisition pattern.
4. The method of claim 1 wherein the last known good alignment position is received from a remote optical wireless device.
5. The method of claim 1 wherein the last known good alignment position
- 10 comprises x and y coordinate values.
6. The method of claim 1 wherein the last known good alignment position comprises radius and angle information.
7. The method of claim 1 wherein the last known good alignment position comprises a time stamp.
- 15 8. The method of claim 1 wherein at least one of said first and second re-acquisition patterns is an expanding spiral.
9. The method of claim 1 wherein the optical wireless device has a field of view and the first pre-defined re-acquisition pattern covers a limited portion of the field of view and the second pre-defined re-acquisition pattern covers
- 20 substantially the full field of view.
10. The method of claim 1 wherein the first reacquisition pattern consists of repeated spirals with increasing maximum radii.

11. An optical wireless link comprising:

a light beam transmitter, configured to transmit an information bearing light beam;

a light beam steering device coupled to the light beam transmitter;

5 a light beam orientation detector coupled to the light beam transmitter and the light beam steering device and configured to detect the alignment of the light beam;

a photodetector configured to detect an incoming information bearing light beam;

10 a memory coupled to the light beam orientation detector and configured to store last known good alignment position data;

control circuit coupled to the photodetector and the light beam steering device;

15 wherein the light beam steering device will position the light beam to the last known good alignment position in response to the photodetector detecting the disruption of the incoming information bearing light beam;

wherein the light beam steering device will further sweep the light beam through a pre-defined re-acquisition pattern starting at the last known good alignment position;

20 and further wherein the light beam transmitter control circuit will periodically transmit light beam alignment position information received from the light beam position detector while the light beam is swept through the pre-defined re-acquisition pattern.

12. The optical wireless link of claim 11 wherein the light beam steering device is a micro-mirror.

13. The optical wireless link of claim 11 further comprising a timer configured to count down a pre-defined time period and wherein the light beam steering device will position the light beam to the last known good alignment position only if the disruption of the incoming light beam does not cease prior to the timer counting down the pre-defined time period.

14. The optical wireless link of claim 11 wherein the light beam steering device is further configured to position the light beam to a default position and to sweep the light beam through a second pre-defined acquisition pattern starting at the default position.

15. A method of re-acquiring alignment between two optical wireless links comprising:

detecting at a first optical wireless link and a second optical wireless link the disruption of a first and second incoming light beam, respectively;

- 5    positioning the first light beam to a last known good alignment position for the first light beam and the second light beam to a last known good alignment position for the second light beam;

- 10    sweeping the first and second light beams through a re-acquisition alignment pattern while transmitting position information for the first and second light beams over the first and second light beams, respectively;

upon detecting the first light beam at the second optical wireless device, transmitting the position information received from the first optical wireless device back to the first optical wireless device as a first updated last known good alignment position;

- 15    upon detecting the second light beam at the first optical wireless device, transmitting the position information received from the second optical wireless device back to the second optical wireless device as a second updated last known good alignment position; and

- 20    aligning the first and second light beams to the first and second updated last known good alignment positions, respectively.

